NEEDED ECONOMIC RESEARCH IN THE BOSTON AREA

Boston City Planning Board

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PREFACE

In any discussion of the economic research needs of a metropolitan area, many divergent views can be properly entertained -- all within the general province of the meaning of the word "research". For the statistician, such discussion might prompt him to propound that what is needed is more and better statistics and statistical analysis. For the government official the major concern would be a need for more "facts" to guide him in policy decisions. For the business man future economic research should be, above all, "practical." For the educator such research should be more scholarly and embrace analysis with greater depth of conceptual insight.

Research funda mentally refers to the search for new knowledge. But if this search is to serve at one and the same time the variety of needs and purposes which immeidately become apparent in discussing its attributes with the different people who a re to use it, then determining how to proceed is a difficult task at best. It becomes even more difficult when it is learned that there is very little economic research concerning metropolitan area in general. Neither theoretical economics nor the so-called "institutional" economics embodies much discussion of an economic structure in a geographic context.

Consequently, this brief report is intended to point up the need for economic research involving the broad, comprehensive structure of the economy of the Boston Metropolitan Area. In doing so it indicates the potentials for such research in terms of available human resources and in terms of current analytical techniques which form the present a ttempts to construct a conceptual framework of a metropolitan economy.

I.

THE NEED FOR COMPREHENSIVE ECONOMIC RESEARCH IN THE BOSTON METROPOLITAN AREA

The Boston Metropolitan Area is one of the nation's most diverse areas -- both in economic terms and in social terms. With a 1950 population of almost 2.4 million, the metropolitan area at that time was the sixth largest in the United States. Its total manufacturing plant in 1955 produced $4.1 billion worth of goods and employed approximately 300,000 persons with a total payroll amounting to $1.3 billion. Employment in wholesale and retail trade accounted for another 240,000 workers. All in all, the metropolitan area represents an economic structure with some 53,000 business or manufacturing establishments employing better than 800,000 workers. In short the area represents a large complex economic entity of national importance providing for the sustence and well being of a population of considerable size.[1]

A comprehensive understanding of this complex structure at this time simply does not exist. Fragmented effort can be found which extracts one or two factors from the total economic stream and attempts to analyze these in the abstract. For example, there exists plentiful data and analyses on such factors as employment, wages, department store sales, manufacturing productivity and a host of other economic indicators. In addition many of these indicators are manipulated in a variety of ways from which certain cause and effect relationships are hypothesized. However, as yet no synthesis of the many diverse research efforts has been conceived by which the structural interrelationships of all the parts of the economy can be measured. In short, no "economic base" for the Boston area has been articulated.

Should such a comprehensive analysis exist, what might be gained by it? What objectives are served and what meaningful insights will be achieved?

[1] Sources for the above: Massachusetts Dept. of Commerce, Massachusetts Dept. of Labor and Industries.

The dynamic and complex nature of an area's economy has a most profound and penetrating influence on the well being of the residents of that area.

> "Modern urban areas owe their existence to the simple fact that they are centers for the production and distribution of goods and services. Take away this economic function and the reason for the inhabitants living there is removed." [2]

Thus, the structure of an area's economy is a strong determinant of how many people live in the area, where they are likely to live, and the standard of living they will be able to achieve. It dictates the area's demand for housing, public and private utilities, transportation facilities, educational facilities, and the host of other urban functions and facilities. Understanding of this structure in a full comprehensive fashion is prerequisite to the efficient and intelligent allocation of the area's resources for the provision of these facilities as well as the anticipation of future economic problems. This latter point is most significant in terms of the future strength of the central area where the most advanced expression of this urban environment now exists, but where district weaknesses are becoming apparent.

In short, an economic base study is of fundamental importance; it is the elementary tool in any effort for planning or decision-making with regard to both the short-run and long-range future of a metropolitan area.

This elementary tool is not present today in Boston. Some efforts have been made in this direction in the recent past but, for the most part, they lack comprehensiveness and depth. Involved, then, is a major task of compilation and evaluation of past work, coordination of present work, and an extension of future work into a systematic, unified structure. The need is for a conceptual apparatus where the major fragments of analysis are brought together

[2] Economy of the Area. Cincinnati Metropolitan Master Plan Study, City Planning Commission, Cincinnati, Ohio. 1946.

and synthesized into an operational model by which the multitude of influences at work in and on the area can be measured and evaluated. The pertinent questions that the following pages attempt to consider then are: 1) what resources exist for this type of economic research in the Boston area, 2) what techniques are available for a comprehensive area analysis, and 3) what combination of resources and technique will most capably fill Boston's needs.

II
ECONOMIC RESEARCH RESOURCES

The Boston area is, of course, noted as a major educational center and a prominent center for research of all types. Perhaps best known in this regard are the research activities in the physical sciences (eg. Physics, electronics, medicine, etc.). Many distinguished research groups function in the field of economics as well. However, very few have turned their attention specifically toward the economic problems of the immediate community. The New England economy, with its problems of dwindling resources and migrating industries, has commanded far greater attention with little consideration of the fact that the Boston area -- as large and diverse as it is -- might also be suffering economic ills. The "big city" of the area never seemed to be in much difficulty compared to the smaller communities where jobs were being permanently extinguished.

In the past five years there has been a strong and distinct tendency to alleviate this neglect of the Boston area. In 1954 the Boston College Citizen's Seminars on the Fiscal, Economic and Political Problems of the Boston Area were started and have continued ever since. From these have emerged the Boston College Seminar Research Bureau, which addresses itself to the problems of the area especially with regard to transportation; and the Greater Boston Economic Study Committee -- a committee made up of private citizens and served by a Research Advisory Council and a competent research staff.

At MIT and Harvard there have existed research centers which have concentrated

on urban planning problems and economic problems in a general sense but which has used the Boston area as its laboratory. The Federal Reserve Bank, while primarily oriented to the entire New England region, has made significant contributions with special studies of the Boston area and Boston-based industries. The Greater Boston Chamber of Commerce has also provided the community with considerable research background of statistical services plus studies in such areas as transportation and urban renewal. The Boston Municipal Research Bureau, a privately financed organization, provides the central city with important analyses of public finance. Other private groups such as the First National Bank of Boston, The New England Mutual Life Insurance Company, Tyler and Company, the Boston Globe, and the Associated Industries of Massachusetts also perform economic research functions.

On the governmental side, the Federal government, of course, provides considerable statistical services through the Census Bureau and the Bureau of Labor Statistics. The Massachusetts Division of Employment Security has engaged in a number of research projects concerned with the Boston area, as has the Massachusetts Department of Commerce. In addition statistical services are provided by the Massachusetts Department of Labor and Industries and the Massachusetts Department of Corporations and Taxation. Local governments have performed economic research primarily in support of planning and industrial development programs. One pioneering effort in a comprehensive economic base analysis is found in Brockton.[3] However, very little economic research is done in local government on a continuing basis.

In addition to the above, there are a number of groups whose efforts might well in the future be directed to the problems of the metropolitan community. Among the educational institutions, Harvard, Massachusetts Institute of Technology, Boston College, Boston University, Northeastern, Tufts, and Regis all have established faculties and departments in economics and a number of them

[3] Homer Hoyt, The Economic Base of the Brockton, Massachusetts Area, 1948.

have formerly organized bureaus of economic research. A number of private consultants maintain offices in the Boston area -- many of them enjoying a national reputation -- and a large number of social service agencies are frequently in a position to undertake economic analysis in support of their work.

In short, it is apparent from this brief and by no means exhaustive picture of the research resources of the Boston Area that considerable potential for the accomplishment of a comprehensive base analysis exists. The fact that such an analysis does not exist, then, cannot be said to arise from a lack of talent or a lack of resources. Four primary reasons for its lack appear to be as given below.

1. Lack of Clear-Cut Techniques

Area base analysis is a relatively new field and in many respects unproven in terms of both theory and practical results. One technique -- the so-called "basic-service ratio" -- has existed and been utilized in other areas since just prior to World War II, but most analysts consider it as a rather crude, oversimplification of a very complex structure. Another technique -- the Leontief "Input-Output" analysis -- was being pioneered in the thirties but only in recent years has the necessary computing apparatus been generally available. Also, the use of the technique in a regional or metropolitan context has evolved only recently. A number of other techniques are available but virtually all have developed only within the last few years.

2. Diversity of Research Objectives

Each of the groups engaged in economic research usually has objectives unique for each organization. Thus one group might specialize in the field of labor, another in the field of public finance, another in corporate finance, another in theoretical development and analysis. With no group, until recently, specifically oriented to the problems of the metropolitan area, it is little wonder that only limited research exists in this context.

3. Lack of Continuity

The Greater Boston Economic Study Committee illustrates the third reason for a lack of comprehensive analysis. This group was initially organized for only one year. At this writing, with the year virtually completed, there is thought of extending its life one more year. With no sense of permanency in such a group there is understandable reluctance to engage in research where many unknowns make accurate time estimates for new explorations impossible. Termination dates render the term "research" meaningless, and the staff director of such a group has little choice but to chart his course over well established paths with objectives as modest as possible.

4. Structural Problems

The GBESC illustrates another difficulty which exists in a number of organizations. The group has split its organization into a number of subcommittees -- each one responsible for studies of some segment of the Boston economy. On the surface this might appear to be the most efficient use of committee talents and staff. However, such splitting automatically precludes comprehensive analysis, and gathering together the work of all the subcommittees into one package does not provide a unified structural framework. Rather it simply represents a collection of unrelated fragmented studies. The subcommittee type of organizational framework will provide comprehensive analysis only if one particular subcommittee is specifically responsible, as such, or unless all subcommittees are possessed with one common objective and one common method of analysis.

It should be noted here that no mention is made of budgetary obstacles. Lack of money resources is an almost universal complaint, and this report assumes that such conditions will be ever present. However, this difficulty usually manifests itself in one or more of the above mentioned problems. Thus limited funds preclude charting new courses, narrow the scope and objectives of any one group, and establishes termination dates. Finally, financial limi-

ations put a premium on efficiency of organization and operation to maximize he output within the given limitations, resulting frequently (but not always r not necessarily) in emphasis on quantity rather than quality.

III.

CURRENT APPROACHES TO ECONOMIC AREA BASE ANALYSIS

The spatial character of economic activity has traditionally been ignored n most economic analysis -- both in theory and in practice. However, it has ecently been the subject of some intensive examination on a highly theoretical evel. In fact, from the point of view of the applied researcher, the level of heoretical inquiry is such that, at present, it would be extremely difficult to se in a specific situation. This is true not only because of limiting assumpions but also through the fact that the variables are so expressed that no data xists which can describe them.

Thus as a practical matter, researchers faced with analyzing a real situaion have developed a number of approaches which lend themselves to reaching a redictive plateau through the manipulation of easily obtainable factual data. wo of these -- the so-called "basic-service" technique and the "imput-output" echnique -- actually have strong theoretical background. Also a recently evolvng technique called "operation research" bases its analysis on the construction f operational theoretical models. One of the best examples of purely factual nalysis lies in the examinations of cyclical phenomena and in the graphical xtrapolations of time series phenomena. In addition, another technique gaining onsidera ble attention is the so-called "social physics" approach where a theoetical model is constructed on the basis of a large volume of factual data ex ibiting considerable regularity within certain relationships.

Maintaining the criteria that a comprehensive economic base study of the Boston Metropolitan Area is sought, each of these approaches is, in the following pages, briefly described and evaluated as the basis for recommending the best means of implementating, the stated objective.

A. THEORETICAL APPROACHES

Two basic approaches have been developed which are strongly theoretical in character. Both are assumed to deal with a geographically bounded economy having internal workings as well as leaning heavily on trading relationships with other regions. The terminology used reflects this dual nature of the local economy: "primary industries are those industries considered to have a trading area beyond the boundaries of the region under consideration, and "secondary industries" are those sectors of the economy which satisfy purely internal needs. The primary industries are inextricably linked with the total (or national) economy. Thus fluctuations in the complete local economy stems from fluctuations in the local economy's primary industries.

This fairly simple framework suffers from a few difficulties. The question of boundaries of the local economy becomes highly critical if the primary or secondary classification of a particular industry is dependent on where that industry markets its products. For example: certain industries might be converted from a secondary to a primary simply by an adjustment of boundary lines. Secondly, the framework renders subservient any economic generating capacity of the secondary industries in the locality. And finally, implicit in the entire formulation is an indifference to the effects of variation of price structure or variations in elasticity of both supply and demand.

The Basic-Service Ratio

Within this general formulation the most widely applied technique is the so-called basic-service ratio analysis, where industries are classified as "basic" or "primary" if there is a greater proportion of employment, wages or

productivity in the local area then there is in the nation as a whole. Employment other than that in "basic" industries is then considered "service" or "secondary".

Past analyses have assumed that the ratio between basic and service employment will remain constant. To determine future employment levels, these analyses have predicted the future behavior of the primary industries by correlating them with national trends. Utilizing the basic ratio then provides the future behavior of the service industries by a simple calculation.

The basic-service approach to analyzing a region's economy has been subject to considerable research in terms of improving classifications and definitions. A recent effort combines the techniques of national income accounting with the basic-service approach, thereby providing it with a far more elaborate framework. The technique has had wide application in the field of city planning, probably because of its sheer simplicity. But serious difficulties do exist.

The economist would criticize the basic-service ratio on the basis of little sensitivity to production components. A constant ratio takes no account of varying marginal costs or varying elasticity. The assumption that a fluctuation in a primary industry automatically induces a proportional fluctuation in the secondary sector, on this count would not necessarily be true. In fact, it appears that, as an urban area becomes larger, growth of the secondary sector occurs at a faster rate than the primary sector. Maturing of the economy involves specialization and diversity with greater numbers of workers going into service activities and a resultant relative decline in both manufacturing and primary processing. To consider this point in another light, if one expands the boundary to its upper limit until it coincides with the entire nation, and if growth is considered dependent on the primary sector, one then finds himself asserting that the economy of the nation depends upon its exports and that all internal activity serves this end. Clearly then relative self-sufficiency

ıerges as another critical variable and implies serious questions concerning ıe ability of the technique to paint an accurate picture of large, diverse ɜtropolitan economies such as New York, Los Angeles, Philadelphia, and Boston.

Input-Output Analysis

The so-called "input-output" technique, initially developed for dealing with ıe national economy, recently has been used on a broad regional level and also ı St. Louis and Kalamazoo for economic base analysis on the metropolitan level. ıe technique distinguishes between commodity flows in and out of the region plus .ows completely within the region. However, it need not distinguish between 'imary and secondary sectors since it measures directly the origin and destina- .on of all commodities.

The analysis is based on two simple equalities: namely, the output of any ıe industry is the sum of all its sales to other industries or to households; ıd, secondly, the total output of any industry is composed of the sum total of .l inputs from other industries necessary for production. In order to show the ıterrelationships of industries within a specifically bounded region there has ı be a consideration not only of sales within the specified area but also of .les having their destination in other regions, as well as a determination of ıputs purchased locally and inputs imported from other regions.

Now the matrix, or network of relations, is developed conceptually can be .lustrated by an example: For steel to be produced in a hypothetical location [illegible] material and labor are required. In this so-called "first round" of [illegible] people move into the area and perhaps some suppliers, which in turn require [illegible]ts for subsistence and to provide the material and labor initially demanded. ese constitute the second round of imputs. Each new activity in turn demands rtain inputs to produce the outputs demanded in the previous round, so that a ird round of inputs is required. In order to produce the third round, a fourth und is required, and so on. Eventually the successive rounds converge toward

equilibrium position. Once equilibrium is reached any change of demand in any ctor of the new economy immediately induces an entirely new succession of rounds til equilibrium is once again achieved.

In this way the imput-output technique places the entire structure of the ban metropolitan economy into a single, comprehensive conceptual scheme. Once e matrix is established, any set of assumptions concerning future activity can introduced into the system and the resulting total effect on the local economy n be measured.

Shortcomings in the technique are of a dual nature. On the one hand are chanical difficulties, and on the other, conceptual.

First, no data exists at present in useable form for carrying out an input-tput analysis on a regional level; for that matter only 1947 data is complete and ailable on a national level. In St. Louis and Kalamazoo the data problem was ndled by surveying each firm, or a selected sample of firms, to determine where puts were purchased and where outputs were sold. Understandably this was time nsuming and laborious. In addition, data processing presents further difficul-es in that electronic data processing and computing methods must necessarily be ployed. Hand calculation would be an almost inhuman task.

Secondly, conceptual shortcomings are present, stemming primarily from the echnical coefficients" which serve as the unit quantitative indicators of the terrelationships between industries. One serious question is the stability of ese coefficients over time. Perhaps more important, however, is the lack of nsideration of varying marginal costs and economies of scale. Preponents of put-output analysis present a strong counter-argument however, in that aggregat-g a number of industries creates an average coefficient over each sector of the onomy which tends to hover at an aggregate "least cost".

Basically, however, the input-output analysis is critieized primarily as being rigid engineering model, and an imperfect one at that. By assuming constant oduction functions and constant channels of supply, the human behavioural

aracteristics of the economy tend to be overlooked. Its major advanta[illegible] the fact that it achieves a degree of comprehensiveness unmatched as yet by any ner technique.

Linear Programming

Since world war II an approach to solving engineering and production manage-nt problems has evolved and the generic term characterizing this approach is peration research". Among the various techniques utilized in operations re-arch are "linear programming", "game theory", and "queing theory". In addition engineering and management applications, operations research has strong implica-ons in terms of economic analysis and perhaps the most advanced development of chnique in this context has been in linear programming. In fact, input-output alysis is in reality a special case of linear programming.

In terms of regional economic analysis two important applications have already erged. In the first instance, linear programming has been applied to problems determining optimal resource allocations for achieving desired production levels employment levels. However, this would have limited applicability in the nited States since it assumes a larger degree of control over the economy than ists here. As a result, its application has been limited to hypothetical under-eveloped areas.

The second application important to regional analysis has been the so-called industrial complex analysis". Given a single resource from which a large ariety of products can be produced (such as petroleum or natural gas) it is ossible through linear programming to indicate which products should be produced nd in what quantities to maximize productivity, employment, income, etc.

Future applications of linear programming involve a considerable range of ossibilities; capital improvement programming, market research, land analysis and ndustrial cost and location studies suggest themselves. It should be pointed ut, however, that the criticisms of input-output also apply generally to linear rogramming.

. EMPIRICAL APPROACHES

The field of economics abounds with analysis where generalizations are leaned from the apparent behaviour of selected measurable and observable factors. or many researchers with an immediately practical outlook, the lure of "facts" is aramount. However, while it is quite evident that an array of "facts" concerning the Boston area will provide a considerable measure of insight in the nature f the economy, it will not yield a comprehensive power of prediction. Drawing a raph and merely extending the line to some future date in roughly the same direcion it has taken in the past is somehow unsatisfactory for even the least sophisicated observer. And while this action may be somewhat enhanced by the use of atios, percentages and other mathematical manipulations, there is always the inerent feeling that something may have been omitted which would materially alter he results.

Cyclical Analysis

In business cycle analysis there is a tendency to concentrate on only two ariables; some measure of economic activity vs. time. Hypotheses are formulated rom this previously observed data and are consequently limited to stating a relaionship of only those variables which the given data measures. In effect, the ata dictates both the phpothesis and the analysis. Consequently it is rare when usiness cycle analysis achieves the degree of depth and breadth which could be onsidered a comprehensive rational tool for prediction. In the last analysis, aith must be placed squarely on the apparent infallibility of the graph, and the ariables measured become of less importance than the deceptive appearance of athematical regularity in the graph line.

Gravity Models

One attempt at gleaning a comprehensive theoretical framework from the reguarities of empirical data is found in the field of so-called "social physics". hen first formulated, most social scientists considered any concept dealing with

e natural law of human gravitation" as preposterous. The multitude of empiri-
, validations of recents years, however, has brought about considerable attention
the concept that the force of human interaction between two points is directly
portional to the product of the populations residing at the two points and in-
sely proportional to the distance between the two points. This basic concept
been extended to the formulation of market and income potentials and the rank-
e rule for cities.

The potential concept rests upon an analogy with analogy with an apparently
elated physical system. In Newtonian physics, mass is assumed to be a constant
the evidence related to the social system indicates the corresponding analogous
tor is most decidedly a variable. This then raises serious questions about the
lity of the human interaction concept to predict over long periods of time. For
nce if the physical analogy is strictly adhered to, there is no allowance of
ying relations between two masses so that the gravity concept makes no allowance
one center to grow at a faster rate and eventually exceed another center in
ulation.

Apportionment and Extrapolation

An analytical technique, present to some degree in almost all economic base
lysis, is the apportionment and extrapolation technique. In this it is as-
tained what share of the national economy is held by the region in question and,
en a "reliable" projection of the national economy, the region's share of that
jection is then computed.

In the basic-service analysis, such prediction is essential to determining
levels of employment in the primary sector of the economy. In the input-output
hnique, such apportionment and extrapolation is frequently used in predicting
final demand characteristics of the non-local sector of the economy. A refined
lication of such analysis has been carried out using gravity models. In short
the present time almost all regional analysis is forced to this type of reason-

g to one degree or another.

The criticism of apportionment and extrapolation is virtually the same as it for cyclical a nalysis. Strong reliance on trend lines and lack of explanation for a large number of variables yields only a crude analytical apparatus at best. Furthermore, it provides no insights into the inner workings of an economic structure but only surface characterizations.

IV

RATIONALE FOR NEEDED ECONOMIC RESEARCH IN THE BOSTON AREA

With the preceding background, it appears feasible that a satisfactory area analysis can be accomplished -- one that will be at once comprehensive and operational and provide a rational implement for forecasting purposes. It appears that the resources exist and that satisfactory analytical techniques are available.

In terms of resources the variety of possibilities have been pointed out. Especially strong points within the impressive array include the fact that the Harvard Economic Study Group possesses more experience in one of the described techniques than any group in the nation (in fact this group developed the technique); The staff of the Greater Boston Economic Study Committee, with their excellent research of the past year, has demonstrated to the Boston businessman the inherent values of economic research; and the Federal Reserve Bank presents considerable strength of talents and resources. Many or most of the other groups listed are also in a position to make significant contributions.

In short, excellent groundwork has been laid, both in terms of technical excellence and in terms of relations with the public. The opportunity for gaining a fundamental tool which will be of elemental value to the various research groups listed, as well as to the Boston metropolitan community, should not be considered something to be set aside for future work but, rather, an opportunity immediate at hand.

In terms of technique, the input-output approach presently provides a framework which permits comprehensive measurement of change at virtually every level of the economy. Notwithstanding its shortcomings already noted, this technique provides not only comprehensiveness but also flexibility. It can be combined with a variety of other types of economic analysis such as cost studies, locational studies, market studies and capacity studies. In short a large variety of research analyses, serving numerous objectives is made possible through injecting appropriate techniques into the elementary input-output framework. The following are indications of some of the possible undertakings using the interindustry matrix in combination with other types of analyses:

1. Measurement of the Effects of the National Economy on the Boston Economy.
   In terms of: productivity, employment, income, consumer demands, commodity flows.

2. Measurement of the Effects of Other Regions on the Boston Economy
   In terms of: shifts in locational patterns, variations in wage payments, variation in efficiency, variations of supply channels, characteristics of interregional trade, variations in regional growth and development.

3. Measurement of the Impact of the Port on the Boston Economy
   In terms of: impact of trade barriers, impact of commodity flows of international and coastwise origin, impact of rate structures, impact of St. Lawrence Seaway.

4. Measurement of Internal Workings of the Boston Economy
   In terms of: locational shifts, impact of central area, impact of service sector, local market analyses.

5. Measurement of Technological Change
   In terms of such possibilities as increased data processing, automation etc. and impacts on technical coefficients.

6. Long-Range Projections
   Long range activity levels on all sectors of the economy

7. Measurement of Effects of Public Policy
   In terms of: taxes, development controls, urban renewal, public works.

It is not intended to imply that an input-output matrix alone will be able to :complish all such investigations. But the total effects of any change in any spect of the economy can be more completely and readily approached utilizing the ıtrix as a foundation or bench-mark. Also, the above suggestions are in no way :haustive. Many additional directions could be fruitfully explored with the ıtrix as the point of departure.

Once a course of procedure has been established, the primary problems are :chanical. The task of data collection is large but not insurmountable. Other :eas have derived technical coefficients from the national tables making adjust-nts for known local differences. Two cities have developed the necessary data :om local surveys. One was a city considerably smaller than Boston, but the :her -- St. Louis -- represents a metropolitan area very comparable to Boston in th size and diversity. Equipment for data processing and calculation is also a cessity but is already available to many of the research groups in the area.

If the work carried out in St. Louis and Kalamazoo can be used as a basis for timates then it would be reasonable to conclude that a staff of from 10 to 12 rsons could accomplish the collection of data in a two year period. Within 30 nths it would be feasible to have the matrix constructed, the technical coeffi-ents derived, and the entire framework in a condition to be utilized for ana-tical purposes. A probable cost estimate would range in the vicinity of 00,000 total or 80,000 per year. It should be noted that in connection with ta collection, considerable prior public relations campaigns were carried out in th cities which have accomplished such a study.

It is not the intent of this report to provide precise recommendations as to v this analysis might be accomplished in Boston. It is intended only as a cata- in stimulating work along this direction. An appropriate forum for discussion the problems and possibilities would appear to be the Research Advisory Commit-

e of the Greater Boston Economic Study Committee, for within this group is presentation from virtually every research group in the Boston area. While its incipal function is guidance and direction for the research staff of GBESC, by rtue of its broad membership, it would also appear to be the most logical and st significant group for the coordination of research objectives, for stimulat- g research of the metropolitan area in other groups, for determining the most acticable manner for achieving the breadth of research outlined above.

S. Bolan -- Chief, Research Division -- Boston City Planning Board -- Nov. 1958